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PROCEEDINGS

OF

The American Microscopical Society.

MINUTES OF THE NINETEENTH ANNUAL MEETING

HELD AT

PITTSBURG, PA., AUGUST 18, 19, 20, 1896.

TUESDAY, August 18, 1896.

The members assembled in the Carnegie Library Building at 10 A. M. and were called to order by Mr. C. C. Mellor, of Pittsburg, Chairman of the Local Committee.

Members of the American Microscopical Society, Ladies and Gentlemen :

To my lot has fallen the pleasant and honorable privilege of beginning the exercises preliminary to the nineteenth annual meeting of the Society, and on this occasion, I will introduce to you two gentlemen, one of whom will make the address of welcome and the other the response, as it were touching the button, and these two gentlemen will do the rest. For the address the committee has been able to secure the citizen who is the best able to make it, one whose attainments are known the world over in his particular line and who is also at the head of the highest educational institution of this city. I have the honor to introduce to you Rev. W. J. Holland, Chancellor of the Western University of Pennsylvania.

Mr. President, Members of the American Microscopical Society, Ladies and Gentlemen :

It is a very great pleasure to me on behalf of the local scientific societies and the citizens of this town to extend to you on this occasion a most cordial welcome. Hospitality, as you all know, is an ancient grace and virtue, and I have heard it said by Pittsburgers that they excel in this virtue, and I, in fact, have heard others that have been in Pittsburg venture to intimate that the claim is just. There have been some historic interruptions to the hospitalities shown by Pittsburgers, notably when General Braddock kept the Indians on the other side of the Monongahela River during the French and Indian War. But away back in the days when Queen Aliquippa entertained George Washington, running down to the present time, there has been courtesy shown to the strangers, save and except when Captain William Trent, about 1772, acted rudely to the Indians who were rude to the Englishman, General Braddock. But these are all facts known to history, and the people of the present day may be relied upon to accord to you in their homes and in all the relations you may meet them a hospitality that will be personal. I welcome you as representatives of the learned of the nineteenth century. It is said of the most famous of the ancient Hebrew kings, accounted the wisest of his day, that "he spake of trees from the cedar which is in Lebanon to the hyssop which springeth from the wall; he spake also of beasts, creeping things (reptiles) and fishes." From this you will observe that King Solomon's knowledge was confined in botany to the phanerogams and that his knowledge of histology extended no further than to the lower vertebrates. He knew nothing of spores and bacteria ; all the wonders of mycetology and cryptogamic life were hidden from him. He knew nothing of the protozoa and the myriad forms of microscopic life with which you are familiar, representing the wonderful advancement of modern science achieved through the microscope. I welcome you as those who are wiser than Solomon, and who know more than the ancients, and trust from intercourse with you to add to the stores of knowledge. I welcome you as friends of humanity. People sometimes wonder why men should spend their time investigating mere minute organisms, spending months and hundreds of dollars.

From the peculiarly economic standpoint, the investigator himself reaps very little return in fame or wealth, but the pathway is broadened and made plain to discoveries which enrich the world. You are representatives of those who with the microscope have carried our knowledge downward into the deep, while the astronomer gazing upward has made his way. Nature is most to be admired in things that are least known.

I welcome you in this ancient city, the city of industries, in which you will find anything that you wish to see, from a beautiful spectroscope, perfect in all its adjustments, to the grosser parts of such a mechanism as the man-of-war; where we make anything from a tack to a locomotive or an ocean steamer. I welcome you to a city in which we have something more than industries. Standing on the companionway of a steamer a few days ago, I overheard a young lady say, "Where are those people from?" Her escort replied, "From Pittsburg." She said, "Where they have nothing but smoke and money." We have a great deal of smoke at times and there is a little money to be picked up in odd nooks and corners, I am told by some. But we have other things. This beautiful building, the gift of one of our citizens, the home of art and science; also the extensive park and conservatory. We have schools, colleges, hospitals and churches and learned societies and all those things that go to make the city a desirable place of residence in spite of its smoke. We have something better—a disposition to grow in knowledge and to make advancement in all lines open to us.

In the name of my fellow-citizens and the Iron City Microscopical Society I extend to you all a most hearty welcome.

Mr. C. C. Mellor—I now take pleasure in introducing to you the President of the American Microscopical Society, Dr. A. Clifford Mercer.

Dr. A. C. Mercer—President Holland, to you and the societies you represent and the citizens you represent, the society tenders its thanks for your words of welcome. The hospitality of Pittsburg is not an unknown quantity to this society. This society met here nine years ago and that meeting has gone on record as one of the best the society has ever had and we have no doubt this meeting will be at least a parallel. We know to some extent—probably only to a small extent, comparatively—something of the work done in Pittsburg to bring about this welcome, and for all those labors we are thankful. I have very little more to say. Personally, I belong to a calling which practises rather than preaches and it will be in accordance with that practice if we begin our work at once ; therefore, I will declare the nineteenth annual meeting of this society open.

The names of a number of new members were then read, as recommended by the executive committee, and by resolution the secretary cast the ballot of the society for them and they were declared elected. They will be found in the list of members at the end of the volume.

Miss Edith J. Claypole, of Akron, Ohio, then read a paper on Notes on Comparative Histology.

Discussion :

Professor S. H. Gage—I suppose everyone who has used the microscope has studied this subject. It seems to me very suggestive that a subject that has been gone over so often has had a little new life put into it. Miss Claypole has considered it from the physiological instead of from the mechanical standpoint. There are at the present day two great schools of physiologists, those that believe physiology is refined mechanics, and those that believe it is something more than ordinary mechanics. Evidently she considers that physiology is something more than ordinary mechanics.

This paper has another beautiful feature about it that shows to the older ones as well as to the younger that there is not any subject exhausted yet. Every increase in knowledge makes an old subject a new one, and this subject has been made alive and interesting. It gives us more physiological insight, and so I feel sure that all of us will work with new zeal, and we hope next year Miss Claypole will bring with her some new tissues. I am sure she will be ahead of any of us.

Mrs. S. P. Gage—It has been very pleasing to notice in this study that the evolution of tissues is coming to be considered of equal interest with the evolution of the grosser structures.

Professor E. W. Claypole—We have the evolution of these tissues and these animals to consider. Unfortunately, from a geological standpoint, we can not get tissues, except in a few cases, to replace what these ancient creatures possessed in this respect. If we trust the embryologists, there must have been some change going on in the course of evolution of these animals on the earth, and it occurred to me that that is partly connected with the change that took place when land-life first began. As long as the reptiles were confined to the sea the animals possessed the advantage of breathing through their skins, but land-life deprived the animals of the power of breathing through the skin, and thus was increased burden of breathing through the lungs. The change took place somewhere in reptile life ; that change was accompanied by the necessity for greatly increased oxidation of blood in the lungs.

We also have to consider such a question as this : Why should the camel alone among the mammalia possess these oval blood corpuscles ? That is a question not yet answered by the paleontologists. The lamprey may be regarded as a highly specialised parasitic creature, because it sucks the blood of other creatures. The lampreys can be carried back to the Devonian era, and if they possessed blood discs almost spherical, then these must be perquisites of very ancient vertebrates. If the lamprey goes back to the Devonian age, it counts among the very early ones, and we have a nut to crack in this case. For that reason I think the possible outcome of this investigation may be of considerable interest to the members of this society who are interested in that part of the question.

Dr. V. A. Moore—I wish to endorse very heartily all that has been said, but I find, in looking at it from another standpoint, that the paper is very suggestive and opens up many subjects of profitable study. One of the most important of these is the diseases of animals. No tissue is more largely affected than the blood, and although much has been learned, still so little is known about its variations, changes and susceptibility to not only solids but those substances recognised as toxin and antitoxin. This paper opens up the field of the variability of structure of the blood in the same individual regarding atmosphere and temperature, food, and so on. I do not know of an exhaustive treatise on the blood of a single healthy animal, and it is on the healthy condition that pathologists base their knowledge of variations. It is important we should study the condition of the blood in a single specimen.

President—I think the discussion proves the paper is all that has been said of it.

The next paper was read by Professor S. H. Gage, on Courses in Histology and Methods of Conducting Them.

Discussion :

Dr. V. A. Moore—All of us who know something of actual work as a teacher will realise fully the profit which this practical talk which Professor Gage has given us will bring to those who are teaching histology. I was very glad of his suggestions in the beginning of giving the students some idea of the practical importance of this work. On the other hand, although I seem to change a little from my former statements, I believe in histology for histology's sake, and bacteriology for bacteriology's sake. Teach truth for truth's sake and not because it has some value or use one can turn into dollars. It is this seeking for truth that has led to the excellent paper of Miss Claypole's. We must look for truth to the men who have investigated the structure of tissues for their own sake. One thing not brought out by Professor

Gage is the importance of the study of fresh tissues as well as those cut and hardened. Our knowledge of malaria and other disorders has come from the study of fresh tissues. Going hand in hand with what he said, this would be very helpful to a student.

Dr. V. A. Latham—I wish to thank Professor Gage very heartily for his suggestions. I hope that his forcible remarks may be made more so by being published, to encourage the medical colleges to assist the practical teachers. In my capacity as instructor in the medical college at Chicago, I find it very difficult to get room for my laboratory work. We are obliged in medical schools to take up and have in our classes pupils who have never seen a specimen under the microscope. We know Professor Gage's position is one of the foremost in the country. His classes of students are really the embryonic workers of the country today.

Professor E. W. Claypole—I wish he could get all the trustees of our institutions together and "lay it to them." If he could get such an audience as that, he might get a few converts. These remarks should be published and handed about, then some effect might be produced. As to what he said about the pathological value of histology, it is a difficult thing when students ask what is the use of studying histology. If you cannot talk in a way to make dollars and cents appear even in the distance, they shun the work. Not one in a hundred can tell the difference between abnormal and normal tissues. If I put an abnormal tissue under the microscope they know nothing about it. They can only send it to a specialist for examination.

Miss E. J. Claypole—I want to speak on one point especially. For two years I have been teaching in Wellesley College and one of my subjects has been histology. It seems to me one of the most important points in histology is to give students the tools to work with, afterwards the fresh tissues and methods of treatment, and if they have the opportunity they will be able to get at the structure of the tissues they have not examined from those they have examined. The knowing of specimens and treatment has been of so much use to me that I could not help speaking of it.

Dr. A. A. Young—I heartily agree with Professor Gage. He went no further than colleges—why not go to the public schools, where a child is taught how a drunken man looks without knowing how he got there?

President—Without calling for more discussion, I will ask Professor Gage to close it.

Professor S. H. Gage—I want to refer to just two things. When I advocated that we should show the students in the beginning what the good of the work is, I think that is correct, because unless one has a tremendous inclination for one subject over another, why should he select it unless he has that inclination? I want to bring about the study of histology for its own sake. A precious few only are capable of research. Those who have not this divine quality will get nothing out of it. But for the few who do have that, you do not have to tell them to study it for its own sake—they will do it after they get started. About the study of fresh tissue: I have said so often in the meetings—tried to impress it last year in my address—that the study of dead things has very little inspiration. It is like studying one thousand years from now the steam engine when we have changed our methods of transportation. How, under the sun, would one get any idea of what it was meant for, by taking it all apart a thousand years from now, supposing nothing remained to show what it was for? In histology, if we do not study the fresh specimens, we miss the pith of the subject. We may study them to get the structure afterwards, but study them alive and see what they can do. So, when life is in the tissue we are trying to understand, we can get some inkling of what it all means. Let us study the live histology and take the dead only as a necessity.

The Physician and His Microscope was the title of the next paper, read by Dr. A. A. Young, of Newark, New York.

Discussion :

Professor S. H. Gage—That was not a false picture the author drew. I know a real good man and able physician, not a thousand miles from a certain university, who has just such a microscope ; very impressing to his patients. How much he knows about it is this : He bought some specimens and allowed me to look over them at one time. The one I examined was labeled stomach, but was evidently an intestine. On telling him that the specimen was not from the stomach, he said the man he bought it from knew more about it than I did and left the label on. Another brought me the result of an autopsy and wanted me to say what it was. I looked at it and told him it was no wonder the man died, because the pathological product was tea leaves. What I have always tried to do with the students who come to me is to tell them they cannot study pathology unless they study normal histology, and they cannot get it any more than German in fourteen easy lessons ; and when the students say they want to get into business as quickly as possible, I say, "Join the army of quacks ; they make $50 to a good physician's $1, and you will get rich."

Professor H. N. Conser—It is nearly always the case with physicians that they have had experience with the microscope, but the instruction is faulty. The matter of section cutting is naturally not very practicable for physicians ; they can leave that to those who have facilities for so doing. I think that is a fault in teaching.

The President appointed Professor Gage, Mr. Kuehne and Professor Kellicott on the auditing committee.

TUESDAY AFTERNOON.

At 3 o'clock the members assembled in the lecture room and were then conducted through the beautiful Carnegie Library building. Mr. Cunningham, the superintendent of the building, acted as guide and led the party through the museum, reading rooms, to the library proper, where the society was received by Mr. Anderson, the librarian. The alcoves, indexing room and study rooms were then inspected, and as the party was about to enter the auditorium an envelope was presented to each member, enclosing a card inscribed as follows: "Souvenir, nineteenth annual meeting of American Microscopical Society, at Carnegie Library, Pittsburg. Visit to Music Hall, August 18, 1896, at 3 o'clock P. M. Program: Andante in G, Calkin; La Cinquantaine, G. Marie; Reverie, Batiste; Overture, 'Zampa,' Herold; Hymn of the Nuns, Wely; Traumerei, Schumann; Offertoire, Wely. Organist, C. C. Mellor."

After thoroughly enjoying the organ recital, evidenced by the frequent and prolonged applause during and following Mr. Mellor's rendition, the society wended its way to the Phipps conservatory, in Schenley Park. Perhaps no conservatory in America can compare with the rich treasures of plant-life contained here, and the beautiful and rare species were greatly admired.

Tuesday evening, about 8 o'clock, the society assembled in the lecture room to listen to the annual address of the president, Dr. A. Clifford Mercer, of Syracuse, N. Y.

WEDNESDAY, August 19, 1896.

Meeting called to order at 10 o'clock.

President—Our first business is the nomination of a nominating committee to consist of five, and to report at the business meeting tomorrow. It will be satisfactory to the society and the executive committee if these business matters can be given as little time as possible, so that hereafter we can give almost all our time to papers and the more legitimate work of the society.

The members proceeded to nominate the following: Professor H. N. Conser, Professor D. S. Kellicott, Dr. V. A. Moore, Miss E. J. Claypole, Professor S. H. Gage.

President—It is moved and seconded that the secretary cast a ballot for these candidates as members of the nominating committee. Carried.

Ballot has been cast in favor of these gentlemen and lady and this committee will report Thursday afternoon.

The names of a number of new members were then read as recommended by the executive committee, and by resolution the secretary cast the ballot of the society for them and they were declared elected. These names will be found in the list of new members at the end of the volume.

The paper of Miss Isabella M. Green, was presented by Professor S. H. Gage, on Ciliated Peritoneal Epithelium in Amphibia.

The next paper is on Photo-micrography, by use of ordinary objectives practically considered, with specimens of work by Thomas J. Bray, of Warren, O.

President—This eminently practical paper is open for discussion or questions.

Professor S. H. Gage—I would like to speak of one little device for the use of students. If we let these lines represent the camera and put an object on the floor there, we get strong shadows. We took the camera in its usual position and, in place of having an opaque object took a piece of glass, under which we put a white paper. That is very impracticable when we come to photograph large specimens, however.

President—We shall have in our proceedings a paper upon similar lines by another gentleman. Such papers will make our proceedings rich in this sort of practical instruction. None of us who has done any photo-micrography has listened without gaining some practical points out of the paper. And I think we have to thank the gentlemen who are not so much interested in tissues and the like, but give us the results of such work. Men who are busy in histological laboratories have little time to do such work. You will notice on the back of the photographs some notes. If everybody in presenting photo-micrographics for any purpose would give us similar notes it would be of immense value ; such notes ought to go with all photo-micrographics.

In regard to the yellow screen, not only has it the value mentioned, but undoubtedly a yellow screen makes an objective which alone would not do good photographic work, capable of doing such work by photographing with the same yellow light for which the objective is corrected for visional purposes.

Then the third point. I think a word ought to be said about doctoring and improving negatives. That is all well enough from Mr. Bray's standpoint, to make attractive pictures, but when using a negative for scientific illustration it should not be touched in any particular; many a point may be developed or excluded to suit the imagination or theories of a person who is writing a paper, just as in the drawings; but the cardinal rule is that the print should come from the untouched negative, and the first negative and not the enlarged one, because in the act of re-photographing you may introduce changes. If we are making photographs for exhibitions and details are not important, then this is beautiful; but if beauty is not the object, but some truth we are after, the negative should never be touched in any of these ways.

Mr. T. J. Bray—I did not mean to touch the object, but simply the surroundings and show the object up more sharply; the negatives have not been re-touched, but simply the background.

The vice-president, Mr. Pennock, then took the chair, while the president read the next paper, on Astronomical Photography with Photo-micrographical Apparatus.

Professor S. H. Gage—Dr. Mercer in his papers usually covers the ground so absolutely and brings in matters that a good many of us are not familiar with. Certainly to have a matter of this kind brought before our society with the practical demonstration we have here of its results, is one of the gratifications we have in our annual meetings. Things come up most of us never thought of, and it certainly never occurred to me to try this on the sun and moon ; but if it is not any harder than it seemed to be, I think we will all be observers of eclipses after a while.

The next paper, Notes on Technique, by Dr. P. A. Fish, of Washington, was read by Professor Gage; also a paper by the same author, entitled Zoophily versus Homophily.

Dr. V. A. Moore—I intended to prepare a paper for this meeting on the importance of animal experimentation, but on account of stress of work was unable to do so. It seems necessary to bring a few facts before the society, coming as I have from the hot-bed of this contest. It is difficult to tell just who started this bill originally, but it was presented by Senator Macmillan, of Michigan. It was brought by certain people belonging to the anti-vivisectionist society. They planned a bill entitled, A Bill for the Further Prevention of Cruelty to Animals in the District of Columbia. It is not necessary to read this, as it is quite an extensive document. While they had not claimed that they wished to prevent animal experiments, the bill if passed will prevent further investigation of the government in this line.

In the first bill presented to this committee, the law required that licenses should be issued by the District Commissioners to all people engaged in vivisection, and the District Commissioners should exercise judgment as to who were fitted to perform these experiments, putting into the hands of the District Commissioners the power to grant these licenses, which must be obtained for every experiment. These permits must be obtained five days before the performance of the experiments. You who are familiar with animal experimentation know that a delay of five days is sufficient to spoil all good that may possibly come from such work. You see it practically stops all work. In addition to that, these Commissioners were to appoint a committee of three from the Humane Society, so-called, who were to inspect laboratory work at any time they choose. You must open the doors and explain the investigation or experiment and stop all work and make an elaborate report to the District Commissioners whenever requested to do so. This bill came up before the District Commissioners and was opposed with as much argument as possible, but to no avail. The anti-vivisectionists procured a very oratorical lawyer and statements of experiments made in France thirty or forty years ago, and were successful. They did modify it somewhat, so that the committee should be appointed by the president and not by the District Commissioners. While it seemed unreasonable to think this bill could be reported, it was, and I have here the report on the same. It shows that the senators were fair in incorporating a good portion of the argument in opposition to it. It is on the calendar of the United States Senate and may pass that body immediately after convening of Congress in December. The people anxious for this bill have circulated petitions and have secured signatures of a great many men of prominence, bishops, clergymen and physicians. One of these has written Bishop Hurst a letter, saying that it was presented to him to prevent vivisection in schools, etc., in the District of Columbia, and we have found from consulting other people that they considered this bill of that character, and not of the sweeping nature it really is. It is one of the most outlandish, unreasonable combinations of proposed legislation that I have ever read, and its influence can be seen from the fact that these men and women who in the State of Massachusetts tried to get similar legislation through and then admitted that, if they can get this bill through Congress, they can use it in getting state legislation, so that really the time is coming when this country will be in the same deplorable condition that England has been for so many years. It is our opinion that vivisection in public schools should not exist. Laws in many states prohibit that. There is a law covering that in the District of Columbia. We have letters and a report from the commissioner there that vivisection is not practised in the schools, and it is not practised in the district schools anywhere, so far as I can learn. We do not want it, do not believe it humane and do not wish to use the life of an animal unless it is for a definite purpose. These remarks seem necessary to show just the condition and the only way in which this bill can be stopped. I think from reports that a large number of senators and representatives who have committed themselves to it, show that the average man is interested in this great question. The admission of such laws has cost England millions of dollars. For example, two diseases have cost England in money $400,000,000. The experiments necessary to find out the causes of these diseases and to find out how these diseases could be prevented would cost comparatively little. Think of the number of animals that have died from these diseases, to the amount in value of $400,000,000, and in this country we had about the same thing going on until this method was devised. All the diseases which have caused innumerable millions of lives are now rare occurrences, such as small-pox, cholera, and like diseases. It seems to me the number of animals that have been sacrificed is very few. On the other hand, I believe the animals used in these experiments suffer inconsiderably. It is only a question of premature death ; but the question, it seems to me, does not rest on that. We have vivisection or animal experimentation for three legitimate purposes. The first is the demonstration of facts already known.

I believe it is necessary to experiment in medical schools. I believe it is necessary, and think every physician in this audience will agree with me, that every medical student should perform experiments on animals. Nobody, in my opinion, has a right to perform surgical operations on the human body until he is familiar with these experiments on the animal, which is always done with anesthetics.

Then there is the necessity for experimentation for the determination of facts, in which the knowledge to be gained has not any immediate utilitarian value, but may be of untold benefit ultimately. Some people think it is wrong to sacrifice life for this purpose.

Experiments made years ago determined facts that were looked upon as ultra scientific that are now indispensable to our knowledge. We are in possession of them because those men experimented for fact's sake and nothing else. We make these experiments for the ultimate purpose of determining facts which will save life and alleviate suffering.

There has been circulated recently, emanating from Philadelphia, a paper having a great deal of influence, saying that there is not any such thing as rabies, and that as a specific disease it does not exist. I do not know how many are familiar with the Pasteur method, but I venture to give a brief explanation of this. It was found by Pasteur and many others that if rabbits or other animals are inoculated with rabies they will die with certain paralytic symptoms. Then if we inoculate rabbits with healthy brains they remain well. Before this discovery by Pasteur, of people bitten by mad dogs about 48 per cent. died. This has been reduced by Pasteur's treatment to less than 1 per cent. This disease exists in this country to an enormous extent. We have had in the city of Washington fifteen cases of rabid dogs during the last ten months. One lady who was bitten by her dog died of rabies. The period of inoculation in a rabbit is less than in a human being. This lady was bitten in the face very badly, on the arm, shoulder and neck, by a dog, and the dog was brought to us and I inoculated two rabbits, and on the fifteenth day the physician who had charge came to me saying, "she is showing signs of rabies." We examined the rabbits and they appeared perfectly well. She died that night and the rabbits two days later. Again, a lady brought a dog for examination, wrapped up in a blanket on her arm, saying it had indigestion. I inoculated rabbits and they developed rabies and died on the twelfth day.

I wish to make a motion that the president appoint a committee from this society to draw up resolutions protesting against this or any other bill prohibiting animal experimentation.

President—Before taking my seat I would like to say a word about why this matter was brought out at this meeting. Back of this movement is something that is very strong. Back of this movement are money and influence, which are gaining sympathy all over this country, towards the end of the prevention of vivisection. It seems peculiarly strong, and it seems to be very thorough. While most of us who received notices have been in the habit of putting these circulars in the waste-basket and smiling, the power behind has been methodical and industrious, and has been wasting no time. It is pretty evident that its motive has been to take the citadel and then gain the country. It looks as if this power intended to capture the District of Columbia and then the country. We have an enemy and a strong enemy. We should share this interruption to our work with other scientific bodies ; and as one of the bodies interested in this matter it would seem as though we ought to do something, at least to show how we stand on this subject, and for that reason the matter has been introduced.

President—I believe there is a motion before the society now to appoint a committee to draw up resolutions in this matter. How many shall be on this committee, Dr. Moore ?

Dr. V. A. Moore—I would suggest either five or seven.

President—The question is open for discussion.

Dr. A. A. Young—It seems to me three will express the wishes of this society much better; I suggest a committee of three be appointed to report tomorrow.

Dr. V. A. Moore—I suggested five or seven. I am not sure that five is necessary. I simply thought that we have here a society of ladies and gentlemen, and that it would be well to have a committee comprising both.

President—Is there any discussion as to the matter proper ?

Those in favor of the motion that the president appoint a committee to draw up resolutions to be presented tomorrow please rise ; contrary the same. It is carried.

This matter has been somewhat under advisement, and it seems to the president and the executive committee that the view taken by Dr. Moore is correct and that the president will name as that committee Dr. V. A. Moore, the chairman, and the other members, Professor D. S. Kellicott, Mrs. S. P. Gage, Miss E. J. Claypole and Mr. H. von Schrenk. This committee will kindly prepare suitable resolutions and report to the society tomorrow.

The next paper, on The Acetylene Light as Applied to Photo-micrography, with illustrations, was read by W. H. Walmsley, of Chicago, Ill.

President—We will now listen to a paper by Dr. V. A. Latham, of Chicago, Ill. The title is, What is the Best Method of Teaching Micro-science in the Medical School?

Discussion :

Professor S. H. Gage—I do not think this ought to go without discussion. One thing impressed me very much, and that was the order of studies. It is certainly a very serious matter to have a person take up a subject he has no preparation for ; it is a pure waste of time and that cannot be helped by the professor. We have in our own university excellent plans. We say no student shall take this course unless he has pre-requisites, for we say in the list of our courses, a man may take a special course in microscopy if he has had the preliminary course.

One point is not often recognised by teachers of science, and that has reference to drawing, which might be omitted. Most teachers of science will consider that heterodox, because there is a kind of belief in the minds of teachers of science that if a student only makes a drawing of his work then he has some definite knowledge. I think Dr. Latham is entirely right, that drawings amount to no more than a poor description made by the pupil. If the drawing is considered with great care by the teacher and the pupil can see that what he put down came from his head, and not from the object, then it is of value ; and whether, in my courses, it is worth while for the pupil to draw everything I have my doubts and think it is not desirable. I think they ought to be made to draw in certain parts, but it ought to be of the same rigid kind and be criticised as severely as the examination paper, or the pupil will learn to draw not from the object before him but from his head. Some of the points in the paper are very pertinent to teachers of science.

Professor E. W. Claypole—I quite agree with what the writer says, also what Professor Gage has said. When I know, as I do, the kind of material that is dumped into our medical schools with the expectation that they in a short time will be turned out M. D.'s, I am surprised that the teachers can do anything with them at all. I have seen them go in and I know how they come out. I think a great deal of responsibility rests on those who teach in the medical schools, but in the common schools they ought to learn things that would be of use when they enter college or medical schools. Why should they not learn drawing at school? It is the proper place, and they have more time and ought to learn to use their pencils with some degree of skill and draw from the object before them. I remember a case where a student brought me a beautiful botanical drawing. I gave the author no credit for it and he wanted to know the reason. I said: "You drew the flower from one, the leaf from another and the stem from a third plant," and he knew it and sat down.

President—I think that many points could be discussed, but feel that we cannot discuss them for want of time.

I feel that the society appreciates what Dr. Walmsley has done with his acetylene gas and with his suggestions about the candle-power. It will be a pleasant thing for the society to be associated with it; and I can ask, in the name of the society, that Mr. Walmsley look into the matter and associate himself with some one he may select and perhaps another year bring before the Society a new candle-power standard.

WEDNESDAY AFTERNOON.

The society assembled at the Casino at half-past two o'clock and took the trolley cars, chartered by the local committee, for a trip to Homestead. Arriving at the Carnegie armor plate works the members were met by officers of the company and conducted through the various departments of the immense plant. The return to Pittsburg was made at five o'clock, and all were delighted and impressed with the scenes often described, but rarely witnessed.

WEDNESDAY EVENING.

At half-past seven the members of the society and invited guests from the city met in the lecture-room to inspect the photo-micrographs, to witness the demonstration of acetylene gas and to examine the microscopes, lantern slides and microscopical apparatus.

The list of contributors to the photo-micrographical exhibit included: Dr. R. L. Maddox, Southampton, England; Dr. Henri Van Heurck, Antwerp, Belgium; A. Nachet, Paris, France; Mr. Andrew Pringle, London, England; Mr. A. A. Carnell, Cornwall, England; James B. Shearer, Bay City, Mich.; Dr. A. Clifford Mercer, Syracuse, N. Y.; Thomas J. Bray, Warren, O.; George Rafter, Rochester, N. Y.; J. B. Shearer, Bay City, Mich., and others.

Mr. Walmsley demonstrated the excellent qualities of the acetylene gas by means of a lantern-slide exhibition, which was thoroughly enjoyed by all present. The microscopical exhibit was not as large as in former years, but was interesting and profitable. Too late were received prints from T. Comber, Esq., of Liverpool, England, and prints and lantern slides from M. T. Monpillard, Paris, France. M. Nachet sent, too late also, as a present to the society, a Daguerreotype made by Leon Foncault in 1844. He writes:

"I have great pleasure to offer to the American Microscopical Society a curious thing. It is a Daguerreotype made by Leon Foncault in 1844, and, what is most extraordinary, I have proof that he began his experiments on this subject three years before the date and signature engraved on the corner of the silver plate (say, only one year after the publication of the invention of Daguerre); so that the application of the process to microscopical photography followed immediately the discovery of Daguerre. This Daguerreotype with many others I have had the pleasure of owning for some months, were made for the engravings of a very remarkable work published in 1845 by Donné, the celebrated French histologist, and it was the first atlas of microscopical histology published after photographs. I hope this plate may have some interest for members at the meeting."

Ex-President Mercer is making an effort to retain the photo-micrographs, which arrived too late, for exhibition next year.

THURSDAY MORNING, August 20, 1896.

Meeting called to order at 10 o'clock.

The names of a number of new members were read, as recommended by the executive committee, and by resolution the secretary cast the ballot of the society for them and they were declared elected. They will be found in the list of members at the end of the volume.

President—The first paper is by Mrs. S. P. Gage, on The Development of the Brain in the Soft Shell Turtle.

Discussion :

Professor S. H. Gage—In connection with the brain of sharks, if I interpret aright, the curvature is more in the adult shark than in the earlier forms. In these the curvature is more like the embryo than in the reptiles and amphibians, which seem to me to have departed farther from the original type. This is seen more in the embryological forms than in the higher vertebrates and sharks.

Professor E. W. Claypole—We incline to the belief that modern sharks have departed from the ancestral form, because in the modern shark the whole front of the mouth and jaw have been turned down to the under surface of the body. The mouth is brought back away under the surface of the head, so that the shark can see nothing unless he turns over, because the mouth is on the under surface of the body, but in the ancient sharks the mouth was not in that position. In Japan the mouth is in front, in India the mouth is in front, but most all have changed to bring the mouth to the under side, and by the bending over of the brain and upper parts of the head this has been brought about, but I do not know to what extent.

Professor D. S. Kellicott—It has been my privilege to dissect the brains of the shark during the past year, and, of course, the mouth of the shark was underneath, but the axis of the brain was quite horizontal, as in the reptile.

Secretary—I wish to have the pleasure of complimenting Mrs. Gage. Her work last year was very much appreciated by the members and others. I am very glad to see she is continuing this work and hope she will continue to do so for many years to come. It seems to me that this saddle cleft she has spoken about has enlarged to the crura; and, if that is so, it seems to me that as the embryo develops, this space getting shorter, it may have something to do with the motor and sensory nerves going to the brain, because in the adult that portion of the brain is quite well developed, whereas in the embryo form it seems to be illy developed and the space large.

President—The next paper is by Professor E. W. Claypole, on The Teeth and Spines of some Fossil Fishes: Mazodus and Ctenacanthus.

Discussion:

Professor S. H. Gage—I used to read that the paleontologist, taking one of these teeth or spines, could reconstruct the animal perfectly, so that it would be practically as though the creature were before him. I was brought up on that belief, but when I saw a paleontologist set the head of one on the tail end of another and reconstruct an animal from half a dozen teeth, I came to feel that paleontology was about as uncertain as some of the modern studies and that paleontologists themselves are more amazed at the things which they are supposed to make than those which they actually can make.

Professor E. W. Claypole—We paleontologists are not the only sinners in that respect. At the same time, there have been some striking illustrations of what Professor Gage has said. But that the paleontologist can reconstruct a fish from its teeth is not true. If the tooth happens to be like that of some other fish, then we can construct that fish, but if the tooth differs from that of other fishes, we could not have reconstructed it.

The next paper is by Professor D. S. Kellicott, of Columbus, O., on The Rotifera of Sandusky Bay.

Discussion :

Professor S. H. Gage—Last year, when speaking of minute forms in water, I had no conception of the little things we are dependent upon. Taking life in the ocean, as whale, shark, cat-fish and so on, that are of use to us, we have very little conception of how they are possible. In a work like this on the plankton of these waters, we are getting some kind of notion how this life has a possibility of existence, and while in a certain way it is more striking to the general public to work on big things, I think finally it will be seen that the men who are working on the small things are getting at the real sources of knowledge and power. I suppose bacteriologists, and others, were looked upon as those who had no connection with this world, but were derided. Those who worked at bacteriology did some things that are of very great value as also those who labor in other fields, and we think it a great work for the community and all will ultimately understand this. It seems to me the descriptions given this morning of these creatures are abundant in themselves for intellectual enjoyment. The philosophic spirit is ground enough for the study of these, even if the economic questions were not involved. I study vertebrates almost altogether and not these lower forms, and it gives me great pleasure to hear about the other forms not familiar to me. The world's knowledge is so great that none can cover all of it, but if we can gain help of friends working in other fields than our own, it gives value to a society like this.

President—There follow two papers regarding water supply. These two papers will be read this morning, the first one by Dr. M. A. Veeder on Public Water Supply for Small Towns, and the other by Dr. Wm. C. Krauss on The Requisites of a Pure Water Supply, leaving the discussion until afternoon.

THURSDAY AFTERNOON.

Meeting called to order at 3 o'clock.

Discussion of Drs. Veeder's and Krauss' papers :

Dr. Turnbull—The supply of water to cities and villages is one of the most important of sanitary matters. It is a question which is receiving a great deal of thought at the present time, and a great many of the states are taking individual action just at present. A few weeks ago I was in Albany, N. Y., and got laws of the State Board of Health, and found that outside of four or five cities, New York, Brooklyn, Poughkeepsie, Albany and Buffalo, the state board has entire control of this question. The law has not been so active in cities, which are allowed to go on with the present supply. Villages and towns have to comply with the requirements of the state board. The state board is really the supervisor and the state engineer is really at the head. No water works can be put in until the sanction of that board is obtained ; that really gives the state the control of the water supply, and likewise control of the sewage disposal and control of rivers and streams.

Dr. Veeder said this morning that most cases of typhoid fever occur in winter. I think they occur mostly in the fall. The germs increase during the hot months of summer, multiplying rapidly after a long period of incubation running from three to four or five weeks. Germs take longest in September and the disease reaches its height in the latter part of November. When severe weather comes there is a drop, and we find by the first or middle of January that the medium average for the year has been reached. In January it is below, and in March it is the lowest. As soon as warm weather comes on it increases and gets to the average in August, reaching its climax in October or November. I have here a chart which I compiled last year for Allegheny. I find that this chart compared with the chart of London for the past twenty-two years is almost identical. It is almost identical with that of Berlin. The fever in the city of New York reaches its climax in October or the latter part of September, showing that the disease is generated mostly in the warm months and reaches the climax before the cold weather starts.

Concerning filtration, I think that people generally believe that filtration is new. They say, what are the experiments in filtration, has it passed the experimental stage? And it is very hard to get them to believe that it has passed that experimental stage. It is perfectly practicable and has been for years. We have preached sanitary filtration here. Statistics for Allegheny and Pittsburg show that we probably lead the civilised world in the number of cases of typhoid. Allegheny leads Pittsburg. Last year in the city of Allegheny, with an estimated population of 120,000, 1,764 cases of typhoid fever were reported, and there were a great many unreported cases. Several hospitals did not report their cases; a great many cases acquired the fever here and were sent out of town unreported. Probably the total number would run over 1,800, or one case of typhoid to 69 of population. We have been trying for years to get a good water supply, and have got it finally so that the question is whether it is practicable. The plan consists of having a filter or crib four feet below the river bottom. The water runs through four feet of sand and gravel, flows into the crib, and from there is pumped into the reservoir. In other places below us, that has not been successful; they have almost as much typhoid as they had before. The only thing I can see where it would be of benefit is that it would take out a great many impurities. We get the water from about ten miles up the river. If the plan were carried out, the contamination would not be so great and we would get better water, but how much better, time alone will show, and I think, from all that I can hear, it is not successful, and measures have been taken for buying property and starting sanitary filtration. We are using the water of the Allegheny and Monongahela rivers. There has been an enormous death-rate for years. The State Board of Health has no authority in the matter; we have not got that far yet. I am sorry that I have got to tell you these things, you being visitors here, but I think these things should be told. We need a new water supply and I am hopeful it will come very soon.

Mr. W. H. Walmsley—I would like to say, in regard to Dr. Veeder's recommendation, that in Chicago we have an unlimited water supply in Lake Michigan. For some years the water had been taken from cribs, by means of tunnels. At that time there was very little pollution in the lake, but as the city grew we found it necessary to extend these tunnels. In 1893, a crib four miles out from shore was finished. We now find that when the wind blows from the south or southwest the water is carried toward and into the outer crib, and whenever it is found even in the slightest degree polluted, the warning cry comes, to "Boil the water." But, after all, I believe in cases where the contamination of water is even suspected, the best way is to boil the water and thus purify it from disease, especially typhoid fever.

Dr. A. M. Bleile—It is pretty well agreed that chemical examination of water has very little value except as to its hardness. I am almost prepared to believe, after a somewhat extended experience, that the bacteriological examination is unreliable, at least in this sense, and wish to urge this, in order to do away with the false sense of security, of the harmlessness of bacteria. That such water later breeds disease has been demonstrated more than once. The only thing is to watch the surroundings, and the engineer is better to do this than the bacteriologist. Unless examinations are made daily they have little practical value. After the germ is discovered, generally the mischief has been done. For instance, an outbreak of typhoid occurred in a hospital with which I was connected. The supply of water comes from reservoirs and during the day is used from wells. This water was examined by others and myself, and found to be very good. There was suddenly a case of typhoid fever. The patient was put into cottage 6. Two weeks after her admittance into cottage 6 a case broke out; a week later, another; in all, nine cases in that cottage. The cases were all confined to cottage 6. Now, these patients got the same food as the others. We investigated the dairy that furnished the milk; no typhoid about that, it being well kept. The ice used is artificial, alleged to be, but I doubt this. At any rate, there was nothing at all that we could find as giving origin to the contagion, and none of the 450 other patients, who had precisely the same supply as these, had developed a single case. I can not explain it. I firmly believe typhoid is water-born, or milk-born when water gets into the milk. We found nothing in water or milk. I believe some germs came into the utensils there at some time. Things are as nearly perfect as possible in such an institution. One explanation would be that typhoid fever is a contagious disease, but all evidence is against that, but I would judge from this case alone that it is contagious. But the point is, that at some time germs were introduced into the water, probably in the reservoir, had existed there for a little while and then died out. The town below now shows typhoid fever, although pure water exists there.

President—This will have to end the discussion, as far as others are concerned, but Dr. Veeder will please answer.

Dr. M. A. Veeder—The point in regard to typhoid fever in winter is not about the number of cases, but such cases as do appear—where they do occur they are more severe—that is the point I make. In reference to boiling water, I might say I mentioned that—I have been recommeding so doing for years. My plan is simple and successful—boil the water and have a large stone jar, fill it up and allow sediment to deposit in stone crock and in most localities there will be a large deposit of lime. Then the direct method would be to have in the house for that purpose, a large number of fruit jars or tight water bottles and put the water in them ; if not having ice put them on the cellar floor. People tasting this water will notice that it is clean and is much better than by using filters, which get foul and are not known how to be kept clean.

President—There has been one paper crowded out and only one, the author of which is here, Mr. Hermann von Schrenk. I think that he will be glad to give us some little account of his paper, occupying about five minutes, and then our program will be quite complete.

The secretary then read by title the remaining papers, being by members who have not been present :

Some Methods of Histological Technique, etc., by Dr. J. Melvin Lamb, of Washington, D. C.

Study of the Cellular Pathology of Carcinomas, by Dr. Clifford Walcott Kellogg, of New Haven, Conn.

Red Corpuscles in Legal Medicine, by Dr. Moses C. White, of New Haven, Conn.

Study of the Colorless Blood Corpuscles, etc., by Dr. M. L. Holbrook, of New York City.

Increasing Pollution of our Municipal Water Supply, by Dr. F. J. Thornbury, of Buffalo, N. Y.

Historical Diphtheria ; its Bacteriology, by Dr. C. F. Craig, of Danbury, Conn.

Historical Note on Photo-micrography, by Dr. A. Clifford Mercer, Syracuse, N. Y.

This completes the list, Mr. President.

President—We are now under head of ordinary business.

Secretary—I wish to say that all members who have read papers and have not handed them in will do so as soon as possible, as I wish to have the transactions out about the 1st of December, if possible, and surely before the holidays (applause), and if our president will set the example all will go well. If the transactions are delayed it will not be the fault of the secretary but of the members of the society.

President—Have you any other report ?

Mr. M. Pflaum—There are two special committee reports. At the last meeting of the society a special committee of three was appointed to re-invest the Spencer fund.

To the American Microscopical Society:

The undersigned, a committee appointed at a meeting at Ithaca, to re-invest the Spencer-Tolles Fund, respectfully report:

After considering the question of receiving but ordinary savings bank interest at 4 per cent. and perhaps 14 per cent. per annum from a building and loan association, they decided unanimously in favor of the latter. A proposition was received from the Keystone State Building and Loan Association, of Pittsburg, showing that an investment of $400, if made before January 1, 1896, would in four and one-half years mature and yield the sum of $700, and thus would earn an average yearly interest of 16.66 per cent. The officers of the Association being personally known to your committee as men of honorable standing and of excellent business experience the committee unhesitatingly authorised the investment of the fund in said Association. The only care remaining to be exercised was to bring the fund up to $400, and to lose no interest in the transfer from Urbana, Ohio, to Pittsburg. The fund at the Ithaca meeting amounted to $372.27; the transfer was so made that full interest was received from the old investment up to January 1, 1896, bringing the sum up to $391.63, to which a contribution was made of $8.37, making the full $400, which began to earn interest from January 1, 1896.

We hope that results will prove that our judgment in this matter was not faulty. Respectfully submitted,

MAGNUS PFLAUM,
C. C. MELLOR,
C. G. MILNOR.

President—This report is before you; what will you do with it?

It was moved and seconded that the report be adopted and the committee discharged.

President—The fund will remain in the treasurer's hands after the discharge of the committee.

The motion was carried and the committee discharged.

Mr. M. Pflaum—The committee appointed at the last meeting reports as to the property of the society as follows:

To the American Microscopical Society:

The undersigned committee, appointed at the last meeting, to investigate the matter of the property and of a permanent home for the society respectfully reports:

1. That this society should adopt as a principle to gather no property of any kind, and to dispose of what it has on hand at the earliest opportunity.

2. That, until such disposal, the property now on hand should necessarily remain stored at Pittsburg, the residence of the present custodian.

3. That as long as the society owns property it should, for the necessary convenience of the custodian, be under his direct control and be stored at his residence—a permanent storage place being, although for some reasons desirable, entirely impracticable.

Second, as to a permanent meeting place, this subject is one fraught with difficulty, and a very serious matter to determine.

A custom cannot be changed in a day. For nineteen years this society, wherever it met, has been guests and been treated as such. And there is no doubt the cities and the local membership therein, as well as the society enjoyed the meetings the more because of this relation of host and guests. Should now this custom be changed? Were the society to have a regular meeting place, then, the glamor of entertaining and of being entertained will vanish, and the society, perhaps, be the loser of many members on that account. The meetings will become dry and business-like and lack that spirit of "enjoying a vacation" which no doubt has aided in bringing many members to the meetings who would otherwise not have attended. Although the society contains many members who are animated solely by the love of science and do not care for the embellishments usually attending our meetings, yet it must not be forgotten that the society is still a missionary body, endeavoring to make converts and must use popular methods in its work.

The expenses of the meeting have always been borne by the local committee, aided by generous citizens. This will, of course, not be the case if the society settles as a permanent resident of a place.

From these points of view your committee cannot recommend a change of the present itinerating method of annual meetings.

The society has never as yet been without invitations from places where to meet, and we may safely trust the future to furnish the same hospitality as the past. But should it happen that no host offers himself, our executive committee may be depended upon to find one.

Respectfully submitted,

MAGNUS PFLAUM,
C. C. MELLOR,
C. G. MILNOR.

President—What will you do with the report of the committee? If it is moved to receive it, you can consider it later.

It was moved that the report of committee be received and that the spirit of the report be accepted and adopted. Seconded.

Professor D. S. Kellicott—I do not want to discuss this question with a spirit of opposition, but the first part of the report, the part which refers to custodian of property, I must say, does not commend itself to me. I can easily see how conditions may arise in which our property may be kept and administered without undue tax on the time and patience of some member of the society, and think I can see that our property with the volumes, if fragmentary, are worth holding for some time. Papers may be called for, and if the volumes are dispersed, are lost. I think it will be well to consider the question a little farther and give it more time, and see if it cannot be solved. It seems to me that would be better. It is not necessary that the treasurer should be the custodian ; it is not necessary that the custodian should live in the same place with the treasurer. I feel, however, that there should be a permanent custodian, one who has a garret at his disposal and who could store the property. I really think it would be better than to dispose of our property.

The second part of the report, in regard to permanent place of meeting, I heartily agree with and will be glad to vote for. The country is too broad, too large, to have a single meeting place at the present, so I would really wish to have the question divided ; that would be my desire, however the society may feel differently.

President—Will the mover allow this to be divided ? If the second has no objection we will consider it divided. Now we will take up the first part of the question, the receiving of the report, and then we can take some action upon it afterward.

It was moved that the report be received. Carried.

A motion was made to adopt the second part of the report. Carried.

President—What will you do with the first part of the report ?

Professor D. S. Kellicott—I will make the motion to lay the question on the table. Seconded.

President—That will leave it open for discussion another year.

Professor D. S. Kellicott—We will then be one year older and wiser. We may have a good building and a cellar and a garret by that time. I may move to make Dr. Bleile the custodian another year.

The motion to lay on the table was carried.

President—There is a little business left over from last year. For instance, announcement was made at our last meeting that it would be desirable to make a change in the constitution, in Article II., so as to read :

> Any person interested in microscopical science may become a member of this society upon written application and recommendation by two members and election by the executive committee.

Professor D. S. Kellicott—I move to adopt the amendment as now presented. Seconded.

Dr. A. A. Young—I would like to know the names beforehand of those who are getting in before they are acted upon by the executive committee.

President—I believe it is good policy at every step to get rid of business in our meetings and keep ourselves to papers. I think this amendment will aid us.

Dr. A. A. Young—If objection is had to a candidate, could not I have it in my power to make objection ? By this means I could not.

Professor S. H. Gage—Our method was patterned after the American Association for the Advancement of Science. They elect by executive council, and there has never been any abuse. These men are all tested by two members of the society, who vouch for them under doubtful circumstances, and I rather think that Dr. Young overestimates the danger of getting the wrong people in. I do not think this is the kind of society the wrong people would get in. If it were "The 400" it might happen.

Mr. W. H. Walmsley—I know that this method was tried in several instances. I know that when names were read out it was the habit of no one to make objections; and in that way cranks were admitted. But when handled in committee cranks were sifted out.

President—We will have a standing two-thirds vote. Carried. The amendment is adopted.

President—Then there are some changes necessary in the by-laws. You will notice in your last copy of the constitution our old name still appears. That is simply a mistake and will be corrected without action; that is in section five. If the secretary will read By-law II. you will see necessity for another change.

Secretary reads:

The secretary shall edit and publish the papers accepted, with the necessary illustrations, in four numbers. The first number to be issued not later than October 1, after the meeting, and the remaining three numbers at intervals of not more than three months.

President—What will you do with this? I believe this was brought up a year ago. A resolution was passed by the society to the effect that the Proceedings be published in one volume instead of four, but no corresponding change was made in the By-laws. It remains for someone to move that the By-laws be changed to correspond.

It was moved and seconded that this change be made. Carried.

President—The third section of the By-laws needs some attention.

Secretary reads:

The number of copies of Proceedings of any meeting shall be decided at that meeting. Each author of papers accepted and published shall be entitled to twenty-five separates of his paper and as many more at the cost of publishing as he may request at the time that his manuscript is sent to the secretary.

Last year I had a great deal of trouble in getting twenty-five extra reprints for contributors, costing $75.00; and much trouble and worry to have reprints sent out, and in one instance the reprints never arrived at their destination. I propose, if the society is willing, to cut off extra reprints to members, at least for one or two years, to save expense.

A motion was made and seconded that this section of the By-laws be remodeled or altered by leaving in simply the first sentence, the rest to be stricken out. Carried.

President—The secretary asks me to call attention to section IV. Reads:

> Papers accepted for publication by the society shall not be published elsewhere until after they have appeared in the Proceedings of the society, except by consent of the executive committee.

Professor D. S. Kellicott—That was really rescinded years ago. Whether it got into print or not I cannot say, but my recollection is that the whole thing was rescinded while I was still secretary.

President—By oversight I was led to suppose that the election of officers could take place at any time, but it appears it should take place in the morning. But it seemed wiser to finish up all our papers and then have exclusively a business meeting. We will finish our general business and then proceed to the election of officers. Now is a suitable time to decide as to the number of copies of the Proceedings you will have for next year.

Secretary—I would rather the matter be left to the secretary and the treasurer. If there is not much saving let us get out the 500, but if there is let us get out only 400 copies.

President—I think it would be wise to leave this matter to these officers with discretion.

President—It is moved, by Professor Kellicott, and seconded that we publish 400 copies or more, according to the discretion of the secretary and treasurer. Carried.

President—I find on our records another suggestion of change in the Constitution, notice of which was given last year.

Secretary—It was moved last year by the secretary—a proposition submitted—that there be two conditions of membership for life, to add to our income. Reads:

> A proposition has been submitted that there be two classes of members, or two conditions of membership for life, which would add to our income. The

first is that persons or organisations desiring to obtain the Proceedings, by paying $50 would be considered as subscribing members, without any other rights of membership; while those paying $100 would be full life members, and entitled to take part in the proceedings of the society.

This is submitted as an amendment to the Constitution.

President—There is a notice before us of an amendment to the Constitution. What will you do with this motion? Will you take any action or not on the matter? Shall we have life memberships of two characters, one to cost $50, one $100, one to have Transactions and nothing more, and the other to have Transactions and privileges of meetings? If there is no motion we will consider that nothing is to be done with the question. There seems to be no motion. The matter will be dropped.

President—In regard to the printing of the Proceedings there seems to be another point about which we have a suggestion. It may be possible to make a reduction of expense by not printing the Constitution and By-laws separately. Last year the society passed a resolution to the opposite effect, saying that our secretary should print separately our Constitution and By-laws. If there is no objection the resolution will stand and the secretary will print separate copies.

Secretary—The price for printing the separate reprints was $15.00.

President—A motion to rescind the resolution of last year would simplify matters.

It was moved and seconded that the resolution of last year, authorising the secretary to print separately the Constitution and By-laws, be rescinded. Carried.

President—We have some committees to report, one on the vivisection matter, of which I believe Dr. Moore is chairman. Dr. Moore.

Dr. V. A. Moore—I have here a few copies of papers received this morning, in which this bill is analysed and the effect it will have on the animal industry of the country set forth.

I furthermore desire to ask each member to write to the chairman of the District committee, or to the presiding officer of the Senate, protesting against the bill; also letters to the senators and representatives of his state. I think short letters, to the point, by different members of this society, will do a great deal of good in bringing about a just consideration of this bill. The committee desire to submit the following report:

WHEREAS, The American Microscopical Society, assembled in Pittsburg Pa., August 18, 1896, for its nineteenth annual meeting, recognises the fact that the development of biological and medical sciences has resulted largely from experiments upon living animals; and

WHEREAS, Those engaged in experimenting upon living animals in scientific laboratories do so for the purpose of gaining the knowledge which may result in alleviating human suffering and improving the condition and value of domesticated animals; and

WHEREAS, No evidence has been presented by those who advocate restrictive legislation showing that abuses, such as cruel and unnecessary experiments, are practised in the District of Columbia; and

WHEREAS, Results of great scientific and practical importance have been obtained by experiments on the lower animals made in Government laboratories in the District of Columbia; therefore be it

Resolved, That the American Microscopical Society earnestly protests against the passage of Senate Bill No. 1552, entitled, A Bill for the Further Prevention of Cruelty to Animals in the District of Columbia, or any modification of this bill, or of any other bill restricting animal experimentation for scientific purposes.

Resolved, That copies of these resolutions, attested by the signatures of the officers of this society, and of its committee appointed to draft these resolutions, be sent to the chairman of the committee on the District of Columbia in the United States Senate and House of Representatives.

(Signed)
A. CLIFFORD MERCER, *President.*
WM. C. KRAUSS, *Secretary.*
MAGNUS PFLAUM, *Treasurer.*
V. A. MOORE, Ithaca, N. Y., *Chairman.*
D. S. KELLICOTT, Columbus, O.
SUSANNA PHELPS GAGE, Ithaca, N. Y.
EDITH J. CLAYPOLE, Wellesley, Mass.
HERMAN VON SCHRENK, St. Louis, Mo.

President—The report of the committee is before you; what will you do with it?

It is moved and seconded that it be received and adopted by a rising vote. Is there any discussion or word to be said? Carried unanimously.

Professor D. S. Kellicott—It seems that those connected with public institutions would have much influence in this matter, and if we see that those institutions take a hand in it, it may have some value. I think it will be well to have the resolutions printed.

Dr. V. A. Moore—It is of great importance to bring this matter to the attention of different members of Congress. I have already seen the representative who represents my district in Congress, and he is heartily opposed to any such legislation. I think it would be wise to have some one see personally those who represent each member of this society in Washington—in addition to what may be done by institutions.

President—The executive committee has seen fit, under our Constitution, I believe, to recommend to this society the election of honorary members. As your president is somewhat responsible for this action by the executive committee, he would like to say a word or two about it. One candidate was our first president; he was also our second president. He has always been in harness up to very recently; but with advancing years his vacation becomes a matter of importance to him, and it is doubtful whether we shall see very much more of him in active meetings. His interest continues. You had a letter from him in which he excuses himself on those grounds. I refer to Dr. R. H. Ward, of Troy, N. Y.

The second candidate was our third president, Professor H. L. Smith, of Geneva, N. Y., and he was our president twice, as was Dr. Ward. He was in the harness until illness and death in his family brought life almost to an end with him. A letter from him is encouraging, indicating he is likely to be with us again before long.

The third is Dr. Maddox, of England. He has sent to this meeting photo-micrographs taken by himself many years ago.

He is the Nestor of photo-micrographers and the discoverer of the present dry plates used in photography.

Professor S. H. Gage—I have the honor to move that General J. D. Cox, of Cincinnati, O., be also made an honorary member. I think the older members of the society recognise that we have in him a man who commands respect as a microscopist as well as statesman and historian and that we honor ourselves by electing him an honorary member. I will move that we add his name to the list of honorary members. Seconded.

Mr. M. Pflaum—I move that the secretary cast a ballot for the election of these members as honorary members of this society. Seconded. Carried unanimously.

President—Unless somebody has a reminder for me, it only remains for us to receive and act upon the report of the nominating committee. The nominations are :

For president, Professor E. W. Claypole, Akron, Ohio; for vice-presidents, Mr. C. C. Mellor, Pittsburg, Pa., Dr. A. M. Bleile, Columbus, O. ; for members of the executive committee, Dr. A. A. Young, Newark, N. Y., Mrs. Susanna Phelps Gage, Ithaca, N. Y., Dr. Wesley P. Manton, Detroit, Mich.

A motion was made that the report be received, committee discharged and secretary cast a ballot of the society for the election of these officers for the coming year. Carried.

President—The secretary has cast a favorable vote for these officers and they are our officers for the ensuing year. Applause.

Professor Gage—It is one of our great pleasures always at the close of the meetings to open our hearts a little, as the hearts of the people were opened to receive us when we came to the place of meeting, and it is with peculiar pleasure that I shall try to express, as well as I can, our feeling toward the local committee of Pittsburg. Every one who has had to do with the carrying on of the meetings realises after he has had this experience that there is a great deal to be done ; and every one connected with the society knows that a great deal of the success of the meetings depends on the way the local committee has smoothed the road, the doors and windows oiled and machinery moving so that everything is ready for us. I have been to a good many meetings of this society and always with great pleasure, with one or two exceptions, when we have had too much politics and am glad to say that we have not had any this year. Never have I been to one that has been better managed than this one. An extra good kind of oil has been put on doors and everything done to make our meeting successful as a scientific meeting. Everything possible has been done to give us that intellectual pleasure and enjoyment which is so great a part of a meeting of this kind. And, therefore, Mr. President, it is with peculiar pleasure that I move a vote of thanks to our local committee for making it possible for our meeting to be so successful.

President—It is moved and seconded that this society extend its thanks to the local committee for its great kindness, for its abundant work and the pleasure that the committee has given the society in many ways. Carried unanimously. The committee is therefore thanked with the full heart of this society for its work in the direction named.

What is the further pleasure of this meeting?

Miss E. J. Claypole—I am sure that everybody who has attended the meetings appreciates the fact that much depends on where they are held; and it gives me a great deal of pleasure to speak of the way in which we have had the opportunity of using this beautiful building and the hospitality shown to us by the Librarian, Mr. Anderson, and the Superintendent, Mr. Cunningham. I do not think that any student goes through a library or building like this without appreciation, and therefore, if it is in order, I would like to move a vote of thanks to these two gentlemen. Seconded. Carried.

Secretary—I move to extend a vote of thanks to the officials who were instrumental in permitting us to see the Carnegie Iron Works, on the afternoon of the second day, and also to Mr. Mellor a special vote of thanks for his interesting recital on the first day.

President—As a sort of general expression let this be a rising vote. Carried unanimously, and it is hearty I am sure.

Miss Claypole moved a word of appreciation to the superintendent of parks for flowers, which was seconded and carried.

Secretary—Last, but not least, we have to thank the press of this city for the able way in which they have treated us. Nearly every paper had one-half to a column or two columns about our meetings. I was told that it was unusual for the press to extend that kind of hospitality to such a small society, and I think it would be well to give a vote of thanks to the press for their kind treatment of the Microscopical Society. Seconded.

President—Carried, and our thanks will be extended in the proper way to the press. The secretary will attend to that.

President—Is there any further general business to bring before the society? If not, the time has come when my relation to you as president ends. I can assure you that, although it has caused me work, I have enjoyed every moment I have served you in this capacity. I have learned to feel more than ever before that I believe in the society. I see reasons for its existence, and I am pleased to work for it. I think that must be the feeling of every officer who undertakes the work connected with this society. As the work progresses the reasons for the existence of such a society become more and more evident. The letter, which perhaps you have read, the letter which I sent to all of you, has expressed some of these reasons, which I need not now repeat. I believe that there is a need for this society and that there is important work for it to do.

I thank you for your kind attention throughout the meetings. I feel grateful to my fellow-officers who have done so much of the work, and, of course, I feel particularly grateful to the local committee and especially to the energetic gentlemen who represented that local committee. I know they have suffered the pangs of discouragement, and I hope they have now grown out of that despondent condition and feel happier, because they must realise they have made this meeting a great success.

I again thank you ; and take the greatest kind of pleasure in asking Professor E. W. Claypole to relieve me of farther duty.

Professor E. W. Claypole—I have not much to say this afternoon ; my turn has not yet come. I thank you heartily for the quite unexpected honor conferred upon me, and I feel that it will be quite a responsibility, and I shall have to rely on your kind help in a great many ways in order to accomplish results next year. But, relying on you, we will promise to do our best at the next meeting and during the interval to further the interests of the society in any way it is possible. I own that I do not share the opinion that has been sometimes expressed, that this society has no true reason for its existence, for there is enough room, scope and work for a microscopical society between the Atlantic and Pacific, and the Canadian and the Mexican line. I do not know where a microscopical society could not find space in this sphere. There are subjects of which we know nothing. There are men and women who are able to investigate, whose attention has not yet been turned this way. We want to turn the thoughts and attention of students to fields where microscopical investigation lies. We want the help of practical students to help students who cannot afford to give time or money. If the Royal Microscopical Society of England can do its work and retain its position in that small country where work has been going on for ages before it began here, we see no reason why there should not be good, full and ample scope on this side, where the harvest is plenteous and laborers few. Railways will not give us as great advantages as we wish they would ; the consequence is that the workers are scant, but the bond that unites the members of this society should be sufficient, if they are really workers, to keep them in line and on the track of work. If I had time I could say some things in regard to methods that could be used to strengthen the society, but will conclude by saying that it will be my effort to serve you to the best of my ability during the year we are now entering.

Professor D. S. Kellicott—Our late president has now retired to the position of an ordinary member, and I suppose we may look upon him and speak to him and address him in the ordinary tones and manners. I suppose also, knowing him as I do, that he is a gentleman who would care to have our opinion of his work and opinion of him as a gentleman. I wish to move the high sense of regard in which we have held him as a presiding officer of this society during the past year.

I move that the society express its regard in a resolution. Seconded.

President—You have heard the motion put and seconded. Those in favor signify the same by rising. Carried.

Mr. M. Pflaum—I wish, on the part of the local committee, to extend an invitation to the society to attend a theater party this evening. We know the sublime is often closely connected with the ridiculous, and we thought you might enjoy a highly moral minstrel show. First, the place where this performance is to take place is in a theater. We will all start together from the Monongahela House ; after the theater, please stick to the local committee and we will lead you on in satisfactory ways.

Dr. A. C. Mercer—We have finished all our thanks and here this thing comes on—what are we going to do about it? I move we accept this very kind invitation from the local committee and thank them for another evidence of great kindness, consideration and forethought.

Seconded. Carried.

Dr. A. C. Mercer—Another matter ought to come up here. Some who have known of work going on through the year are aware that certain journals have done a great deal for the society, particularly two—the *Observer*, of which Miss Booth, one of our members, is the microscopical editor, and Mr. Smiley, of Washington, has given us a full page in the *Microscopical Journal* throughout the year. Letters have passed between Mr. Smiley and members of the executive committee and we have reason to feel that he has done a great deal for the society in getting membership and, therefore, I would move we extend our thanks to Miss Booth and others connected with the *Observer* and to Mr. Smiley for the help they have given us through the year. Seconded. Carried.

The society was then declared adjourned.

Thursday evening was pleasantly spent at a theater party, to the enjoyment of all who had the good fortune to remain, and thus ended, perhaps the most successful and certainly the most enjoyable meeting the association has ever held.

TREASURER'S REPORT.

FOR YEAR ENDING AUGUST 12, 1896.

To Balance on hand at Ithaca meeting, Brooklyn Prize fund	$30.00	
" General fund	66.92	
		$96.92
" Membership dues, 1893, 1	2.00	
" " " 1894 8	16.00	
" " " 1895, 18	36.00	
" " " 1896, 224, less $1.04	446.96	
" " " 1897, 11½	23 00	
" " for meeting only	1.00	
		524.96
" Admission fees, 1895, 1	3.00	
" " " 1896, 26	78.00	
" " " 1897, 2	6.00	
		87.00
" Donation	5.00	
" Exchange	25	
		5.25
" Sale of Proceedings		90.93
" Contribution Brooklyn Prize fund	51.00	
" " International Bibliographical Bureau	25.00	
		76.00
" Spencer-Tolles fund		400.00
		$1,281.06

Cr.

By Postage	$35.75	
" Expressage	45.53	
" Stationery and printing	34.90	
" Sundries	31.95	
" Issuing Part 4, Vol. XVI.	123.43	
" " Vol. XVII.	478.50	
" Brooklyn prizes	81.00	
" International Bibliographical Bureau	25.00	
" Investment Spencer-Tolles fund	400 00	
	$1,256.06	
Balance on hand	25.00	$1,281 06

SPENCER-TOLLES FUND.

To Amount reported at Ithaca meeting	$372.72
" Interest to January 1, 1896	19.61
" Contribution of Magnus Pflaum	8.37
	400.25
Less expenses	25
	400.00
To Interest to July 1, 1896	23.04
	423.04
Total increase during year	50.77

MAGNUS PFLAUM,
Treasurer.

We hereby certify that we have examined the foregoing accounts for the year 1895–1896, and find the same correct with proper vouchers for expenditures.

August 18, 1896.

F. W. KUEHNE,
S. H. GAGE,
D. S. KELLICOTT.